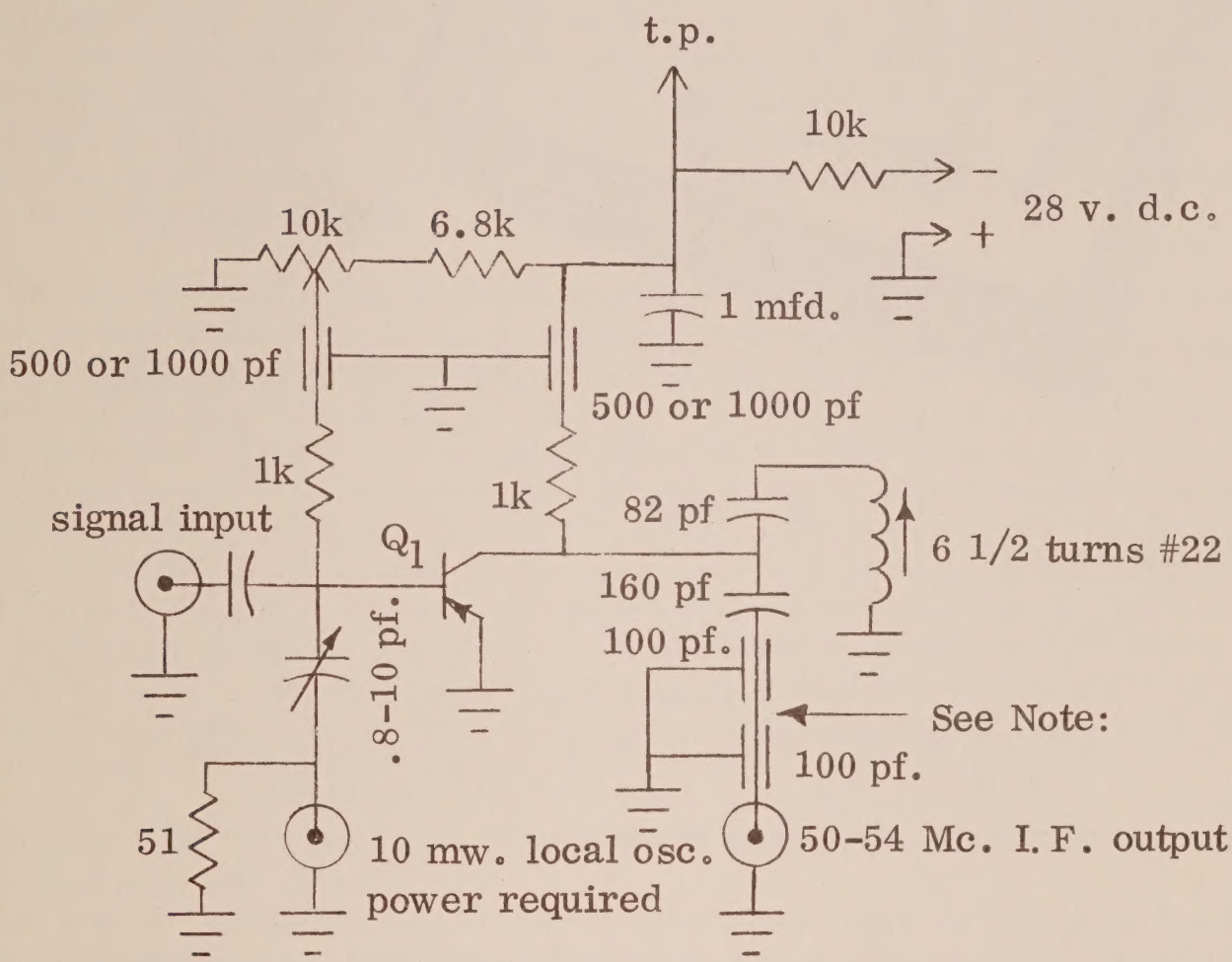
VHFER

LEARN BY DOING

50 MC. AND UP

Volume 4, No. 7 Sept.- Oct., 1966



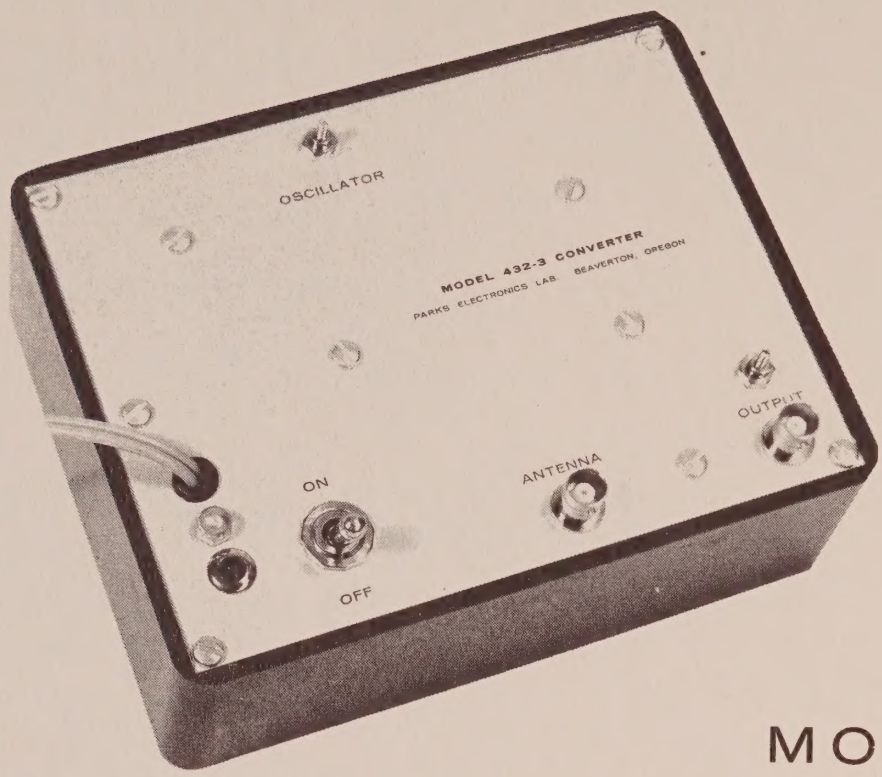
Q_1 TIXM05 or TIXM10

Note: Inductor has been removed from this point.

Adjust pot for 10 volts at t.p. with local oscillator disconnected. Adjust local oscillator power until voltage at t.p. is between 6 and 8.

A MIXER FOR 432

A 432 DX MAN'S CONVERTER



MODEL 432-3

NEW FEATURES:

--All solid-state design
--Zener-regulated a.c. power supply
--Extremely low-noise front end-- 4 d.b. or less.
--High image and I. F. leak-through rejection
--Excellent frequency stability.

This converter uses the Texas Instruments TI-XMO series transistor. We pick the best from the 01 and 06 types to give you performance equal to or better than the general run of the former TIXMO5, apparently no longer available---at least for now. From our tests these transistors are superior in performance to the 2N3399 we formerly used and cost much less. They're also less expensive for you to replace if you damage them with r.f. This converter has a tuned input, something our previous converters and preamps did not have. It cuts down on interference from other stations in the big cities.

ORDERING INFORMATION: Price is $55.00 postpaid. Add 35¢ for Special Handling, a fee charged by the post office for faster delivery. Add $2.50 for Air Mail.

I. F. Ranges available put 432 Mc. at 26, 27, 28.1, 29, 30.5, 49 or 50 Mc.

Type BNC connectors only.

PARKS ELECTRONICS LAB.

ROUTE 2 BOX 35 BEAVERTON, OREGON

W2CCY 432 MHZ MIXER
by K7AAD

This article is a mixer in more ways than one. W3SDZ sent it to me with pictures, a diagram and a few notes as to what was what on the picture and diagram--no text. I'm writing some text for it because I think it has some good points that make it not only a useful experimental tool for use with your experimental preamps but a mixer the not-too-experienced ham can make work properly. For what they're worth, here are my comments on it.

1. The I.F. is 50-54 MHz., which means you can run it right into your low-noise 6 meter converter. If you use this mixer without a preamp it should work fairly well. I would guess noise figure at best would be about 10 db. It sounds worse than it really is. That was the best you could get with most tubes a few years back. It is OK for local work. Using a 50 MHz I.F. means any image is 100 MHz away and with an untuned input the farther the better. Of course if your oscillator chain is injecting other than 382 MHz. you could get other services within the tuning range of 50-54 MHz. Most activity is right near 432.

2. I like the method of setting up the mixer with so much current coming from forward biasing of the transistor and so much from local oscillator signal injection. It is often a problem getting a mixer to operate properly and this method is as good as any I know and requires nothing but a voltmeter. It might seem the 28 volts is a waste but you could use batteries temporarily as current drain is very low. Then once you know what voltage is best at the test point you could supply that voltage at the test point from flashlight batteries. Keep in mind the collector to emitter rating on the TIXM01 thru 10 series is 9 volts. I have used them in some oscillator service at 9 volts and had them go out on me after a while. I recommend the TIXM10 as it is available and as good as the best TIXM05s. You can get them from us if you wish at $2 for 3, postpaid, with a limit of 3. We are using them in our converters now. We find that there is much less trouble in getting the converters to meet noise figure specs and that many perform better than specifications --measureably better, not hearably better.

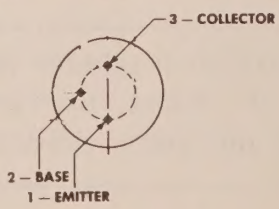
3. The size of the input blocking condenser was not given. I would guess it is between 5 and 20 pf, probably 10 to 15.

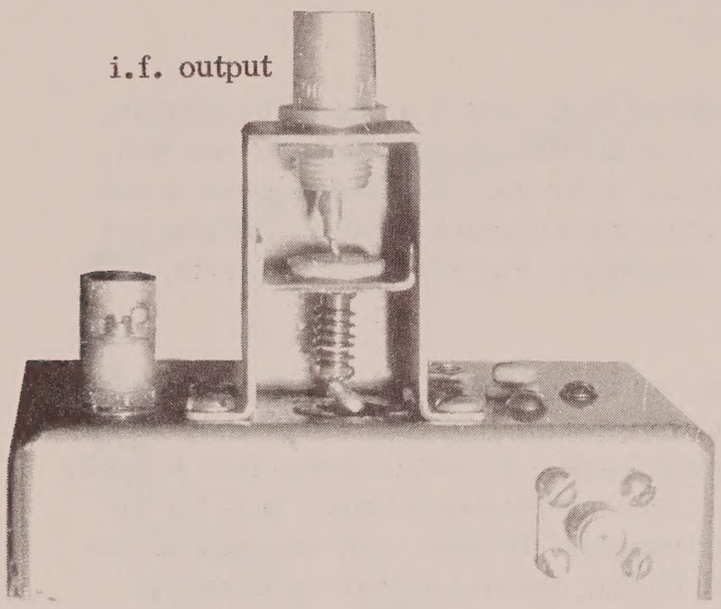
4. In general, bypass values are not critical, but the tank bypasses are critical because the two 100 pf. bypasses essentially make a tap on a capacitive voltage divider. The choke in the picture was apparently omitted subsequently.

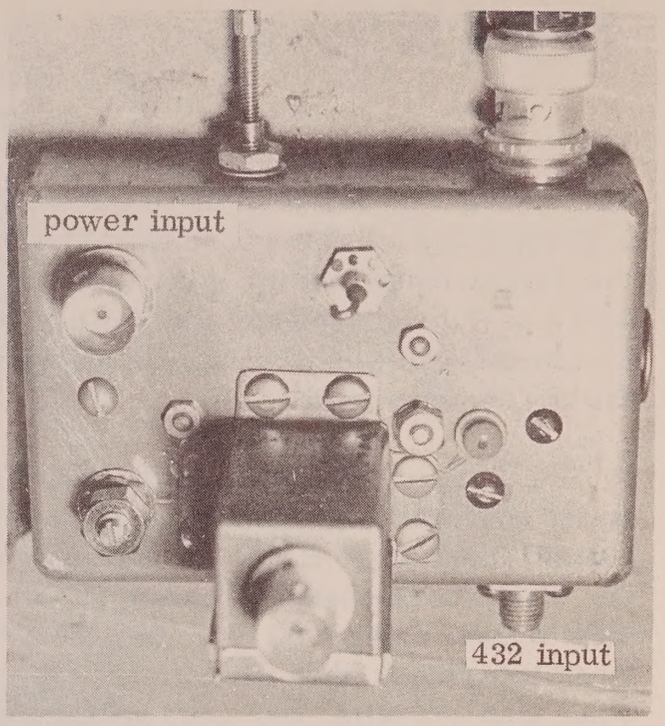
5. When you have the mixer connected to your 6 meter converter you should get a noise increase when you apply power and a noise variation when you adjust the output slug.

6. The transistor socket used is non-standard. I would use a socket and not solder to the leads as germanium transistors are easily damaged if you don't use a heat sink between the joint and the transistor. Bottom view basing for the TIXM01 thru TIXM10 is shown below. Transistors are made by Texas Instruments and available at Allied. The price recently nearly doubled--61¢ each in hundred lots. In the bigger cities the guys get together and buy hundred lots. TI changed the mold and they don't break like they used to . Incidentally, we use these in 455Kc i.f.s at 4.5 volts, selected for low gain, and don't have to neutralize. Output cap. is very low. End.

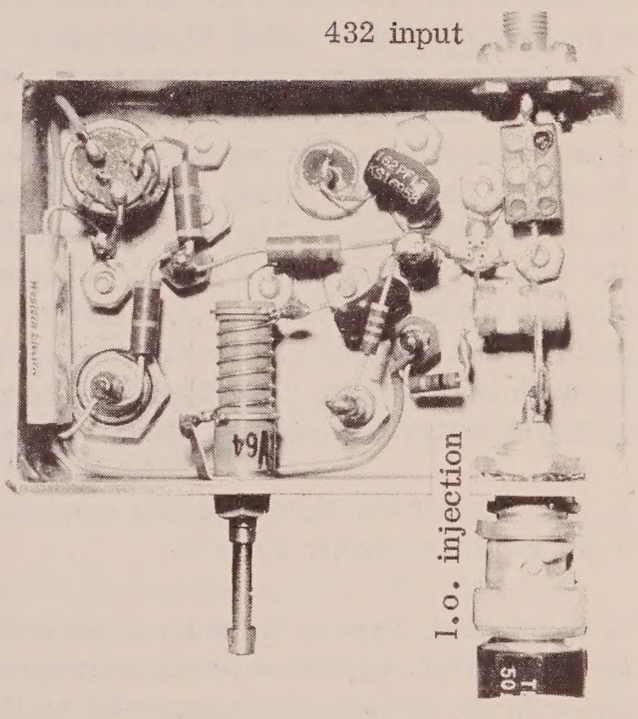
Diagram on cover, pictures on page 4 .







I goofed. After printing the preceding text, I found the copy W3SDZ had sent, paraphrased as follows: Real noise figure is about 9 db when you account for the image response. That's about all you need in the mixer with a couple of transistor r.f. stages. Cliff found some local oscillator energy in the first mixer he built, so he added a low-pass filer to the design of the mixer pictured. The filter can be built in two ways. The diagram lists 100 pf. feedthru buttons as they are easy to obtain. With these, the inductor is just a straight piece of wire. If you can obtain 20 pf buttons then you can duplicate the inductor as pictured.



With a simple change in the output inductor of the mixer, this unit can be used as a universal mixer on any of the VHF bands from 50 Mc. up to about 500 Mc. The philosophy of the design is what is important. Like building a component hi-fi system you can go to a more stable local oscillator, experiment with new R.F. amplifiers, etc. and still use the mixer unit without change. End.

VHFER magazine is published every other month by Parks Electronics Lab., 419 S.W. First, Beaverton, Ore. 97005. Subscription rates: U.S. & possessions, $1 per year, others $2 per year. Second class postage paid at Beaverton, Ore. 97005.

CAVITY FILTERS

by Denton Nelson, W7UHF

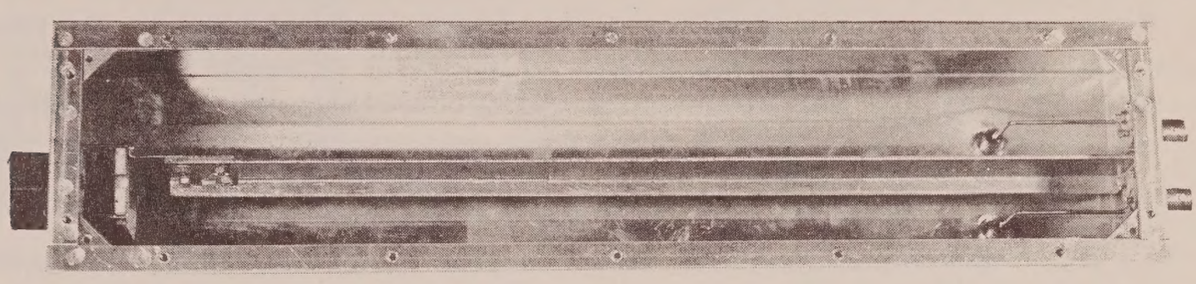
One of the biggest headaches VHF hams have today is interference from TV and FM stations. The blame might rightfully rest with the ham's converter, his antenna system (including his feed lines) or the TV & FM stations themselves (they aren't all perfect.) If these stations aren't actually radiating energy in the ham bands, the cause is often insufficient selectivity in the converter. A low-noise converter front end is over-coupled and is therefore very broad. The Parks converters are made with lowest noise figure the prime target and therefore the front ends are rather broad. It is not possible to get low noise, excellent front-end selectivity and still be priced competitively. The high degree of selectivity in the front end required by hams living near TV and FM stations must be obtained externally, and the cavity filter seems the best way to get it. A cavity filter isn't going to solve everyone's problems, but it may do a lot of good for a relatively small outlay of cash and effort----if it is made and used correctly.

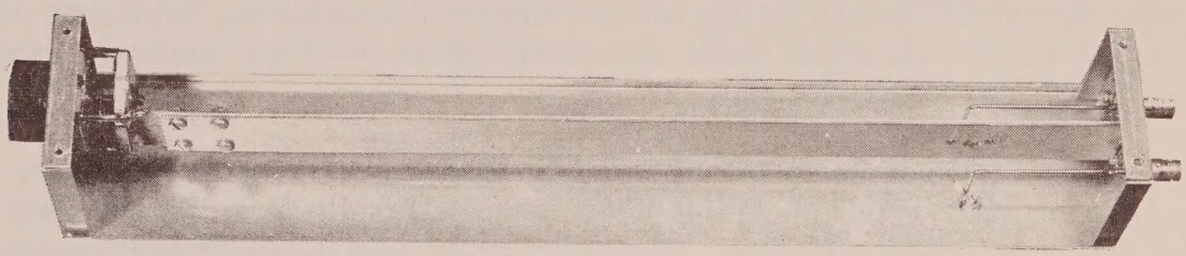
There are two main reasons for installing a cavity filter in your VHF transmission line. One is to keep harmonics generated in the frequency multiplier stages of your transmitter from reaching the antenna. The cavity filter used in this manner passes the desired output frequency almost without loss and severely attenuates other frequencies removed by several megacycles. These "other" frequencies are often the ones that get into the neighbor's TV set. If you are running high power, you may find that placing the filter between the exciter and the final amplifier gives sufficient attenuation and doesn't require such a high voltage condenser for tuning. Placing a filter between a VHF SSB exciter and the final amplifier is a big help in reducing the unwanted outputs of the SSB mixers.

Two cavity filters are shown in Figure 1. A cavity filter is essentially a completely enclosed box with a rod or strip of metal in the center which is grounded to one end of the box and connected to a variable capacitor at the other end. The incoming signal is fed into the cavity thru a connector and to a wire loop which is grounded inside the box. The "Q" of the enclosed tuned circuit is very high and currents circulating within the box are quite large at resonance. Current is induced in a similar loop of wire on the opposite side of the center line which is the output. Since the filter is symmetrical, either loop can be used for input or output. The impedance at the condenser end of the filter is very high and large r.f. voltages can exist across the tuning capacitor when the filter is used in the line from the transmitter. Therefore a high-voltage type capacitor is required. But for receiving, any capacitor of the right capacity range will work.

A second reason for using a cavity filter is to prevent the multitude of commercial signals adjacent to the VHF ham bands from entering the receiving converter. If these unwanted signals are present in sufficient magnitude, they can mix and produce sum and difference frequencies that fall in the ham bands. These signals are commonly commonly called TV or FM birdies. Such strong signals can also cause cross-modulation with the ham band signals or mix with the harmonic outputs of the converter's local oscillator. If you can prevent these commercial signals from getting into the converter in the first place, and that's the purpose of the cavity filter, a

lot of spurious signals can be reduced tremendously or just cease to exist. There is a price you must pay for this, unless you build a rather complex filter. And the price is that you will have to re-peak the filter as you move across the band if you want best receiver sensitivity. For this reason you may want to use separate filters in the transmitter and receiver lines to the antenna.





In using a cavity filter there are some precautions that should be observed. When a cavity filter is connected into a matched transmission line of the characteristic impedance for which the filter is designed, everything works fine. This is the case if you are using filters like those described in this article with a 50 ohm coaxial line and a matched antenna----when you're transmitting. But receiving is another matter. The input impedance of a converter adjusted for lowest noise figure is not equal to the characteristic impedance of the line (the source impedance) but is higher--typically 80 ohms at VHF for a 50 ohm source. You know that a transmission line must be terminated in its characteristic impedance to be purely resistive at its input. If it is terminated in another impedance, its input impedance depends on the nature of the termination and the length of the cable. The point of this is that if you use just <u>any</u> length of cable between the cavity filter and the converter, you may not be getting the performance of which the filter is capable.

It has been found experimentally that by using an interconnecting cable whose length is an electrical quarter wavelength, the transforming action of the cable eliminates most of the de-tuning effects of the mis-matched load. This phenomenon is illustrated in the tracings of Figure 2. The upper curve is the response of the Parks Model 144-1 converter. The sweep generator is a Heathkit TV alignment Generator. A ten d.b. coaxial pad isolates the sweep generator from the converter and provides the converter with a true 50-ohm resistive source. The center curve is the resultant response of filter and converter using the upper filter of Fig. 1 and a 24" length of RG 58/U cable between the filter and the converter. The filter is tuned for maximum response at 1 megacycle increments through the 2 meter band. Note the lack of symmetry in the response, and the broad double hump of one curve. In the lower trace conditions are the same except that the cable connecting the filter to the converter is only 13.5" long which is an electrical 1/4 wave at 2 meters. It is likely that this same condition exists when the filter is placed between an exciter and a final, so a multiple of a quarter wavelength is recommended for the coax line. Be sure to include the velocity factor of the coax in your calculations.

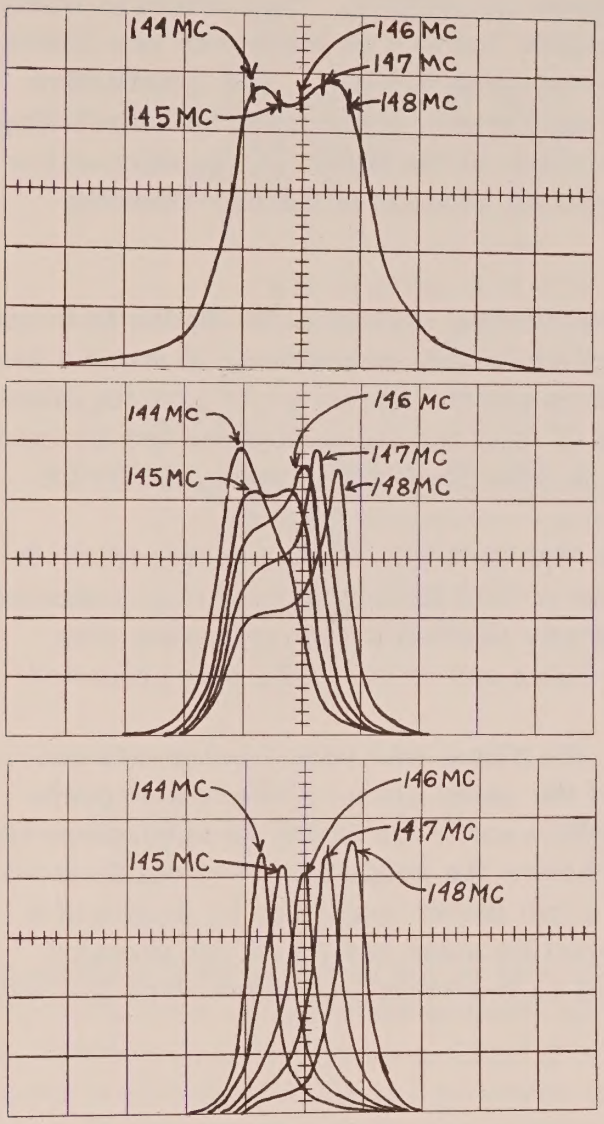


Figure 2

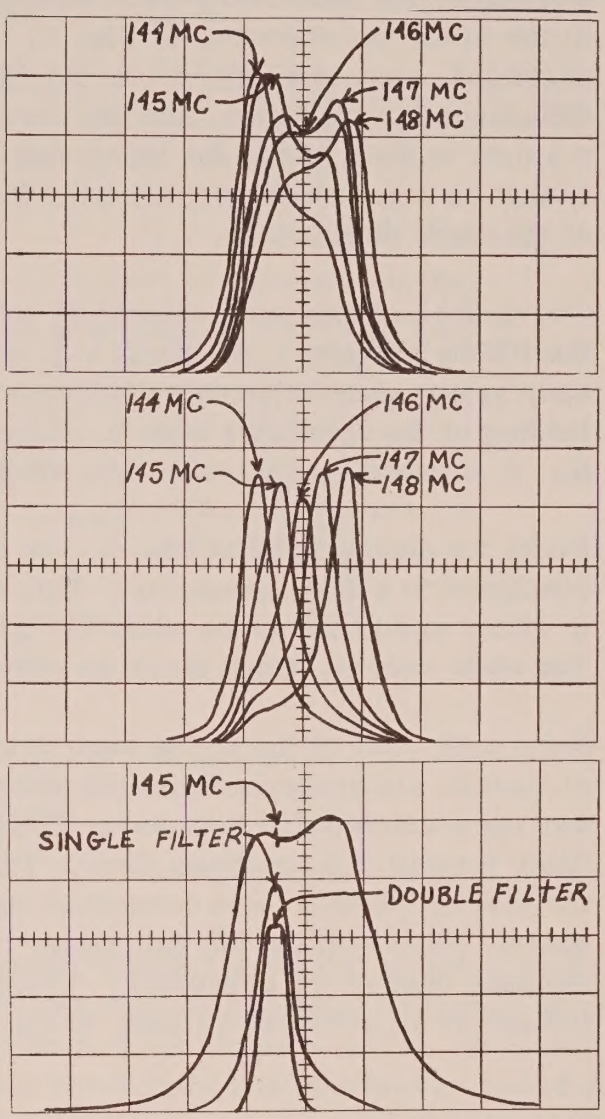


Figure 3

The upper curves of Figure 3 show the response of the filter built in the Bud Mini-slide box when 24" of cable is used. The detuning effects are not quite the same as before, but are still rather serious. The difference is probably due to a little different coupling and the smaller dimensions of the box. The center curves were obtained with the 13.5" interconnecting cable and re-tuning the filter in 1 Mc. increments. The lower curves show the response of the converter alone, that of a single filter with 1/4 wave connecting coax added, and then two filters cascaded ahead of the converter. Note how the sides of the smaller curve are pulled in. This increased attenuation nearby may be very helpful when the guy down the block is operating.

There are complications in cascading two cavities. There should be no interconnecting cable between the filters or the cable should be an electrical half wavelength long. Otherwise the resulting response curve will have a double hump which cannot be made into a single narrow peak by tuning. The distance between the peaks of the double hump depends on the length of cable used to connect the cavities together.

Normally, the insertion loss of cascaded cavities is additive. This effect is shown in the lower set of curves of Fig. 3. The smaller curve was made with two filters cascaded, each of which had an insertion loss of about 0.9 d.b. The quantitative difference in amplitudes between each set of curves was determined by substituting a 1 d.b. coaxial pad in the transmission line ahead of the filters. The attenuation cannot be determined directly from the waveforms because of the non-linearity of the diode detector.

One method of obtaining selectivity without sacrificing system noise figure is to place the filters between a low-noise r.f. preamplifier and the converter. It may be necessary to use some attenuation between the filters and the converter to prevent overloading of the converter when a strong signal is near the frequency you are listening to. A suitable coaxial cable type attenuator is described in this issue of VHFER.

From the photographs of Fig. 1, you can see that each end of the pickup probes is connected to a BNC connector. This was done so that the signal could be connected to either end of the probe while the other end was shorted with a grounding plug. The tests showed that it made no difference which end of the probe was grounded.

Since both ends of the probe were available, the signal was connected to one end of a probe and removed from the other end of the same probe. The second probe was open-circuited at both ends. This procedure made the cavity an absorption-type filter instead of a bandpass filter. Figure 4 shows the response curve obtained when the absorption filter was connected ahead of a two meter converter by means of a quarter wavelength of 50 ohm cable. The rejection notch can be moved through the pass band of the converter. There is also an insertion loss taken when the cavity is used as an absorption filter, about 1 d.b.

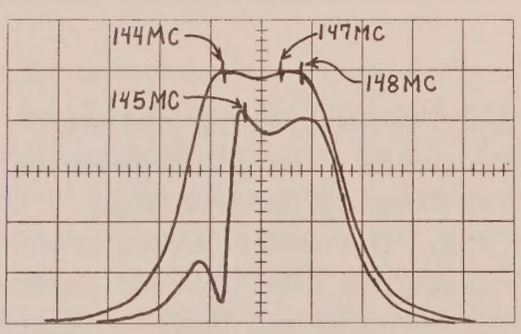


Figure 4

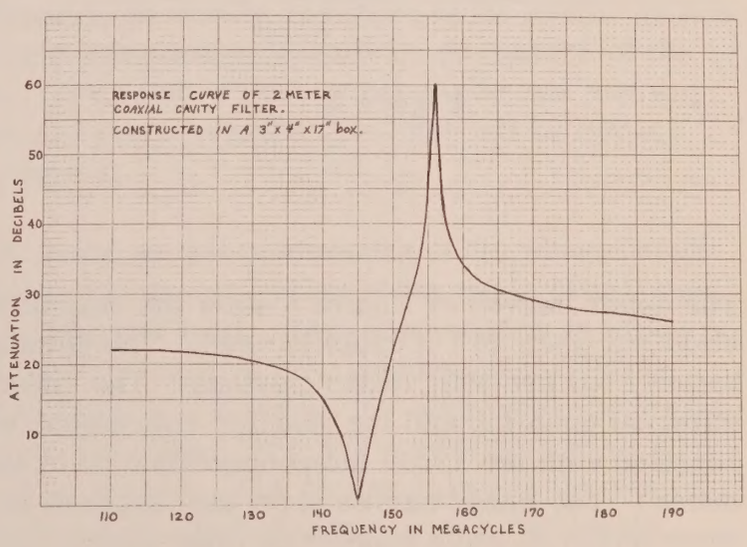
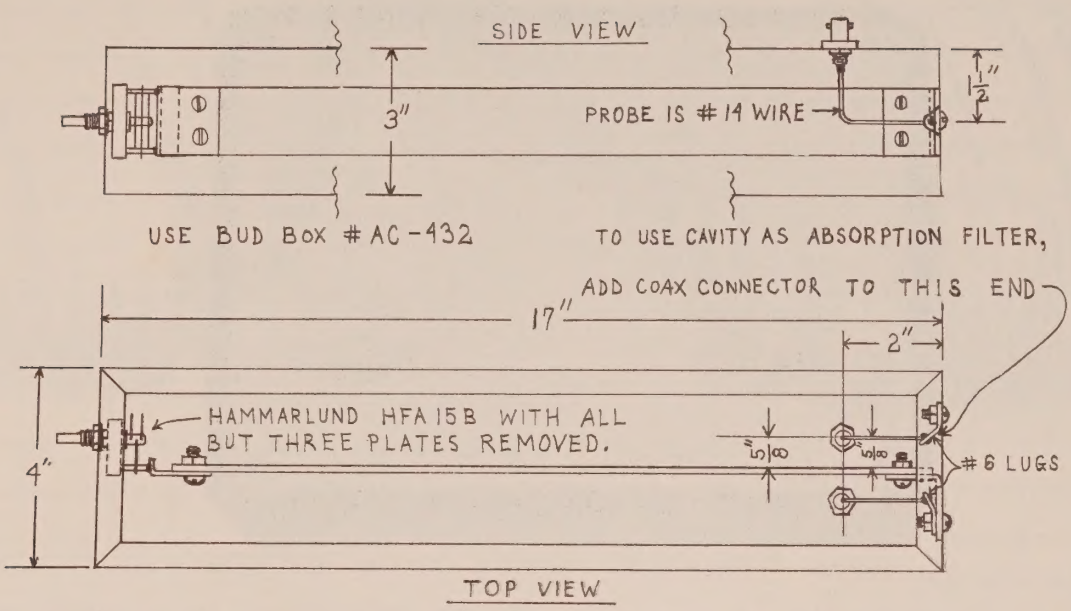


Figure 5

An absorption cavity can be cascaded with a band pass cavity filter for additional rejection of unwanted signals. The absorption cavity is connected to the band pass cavity with an electrical half wavelength of coax. At 220 Mc., TV interference is really a problem, and an absorption fiter set on the offending TV channel may reduce interference considerably.

2 METER COAXIAL CAVITY FILTER.

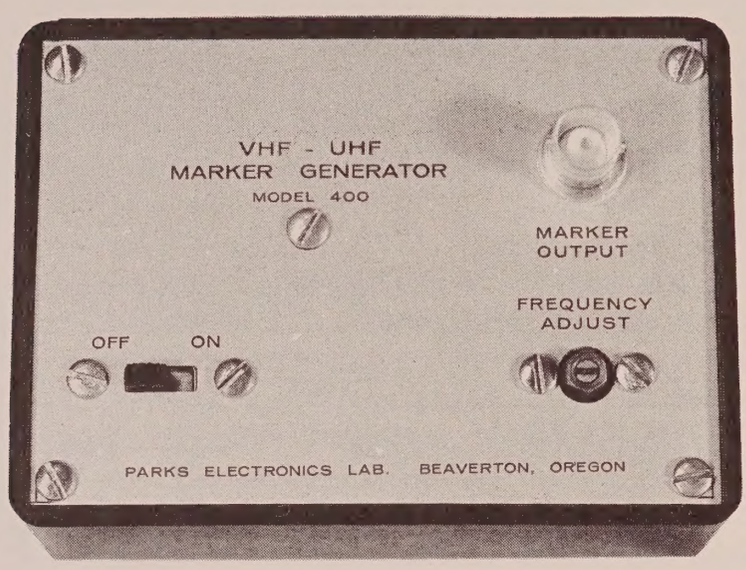


ODDS & ENDS
by K7AAD

Moonbounce Newsletter is not in this issue because it hadn't arrive at printing time. We still badly need construction articles as you can see from this issue. I recently bought the Heathkit Tunnel Dipper and find it far superior to their old tube model. It is much easier to pick up r.f. from low-power transistor oscillators and multipliers and of course it doesn't have warm up time or a cord. The calibration is not too good and the control of tunnel diode current is touchy but I feel I got my money's worth. If you're trying to build equipment without the aid of a grid dipper you're wasting an awful lot of time.

Some of our doctor subscribers to VHFER have asked what we make in the medical line. We are primarily in the field of heart and blood vessels with diagnostic instruments. We make mercury strain gage and impedance plethysmographs for peripheral vascular disease and surgical monitoring, experimental surgery, etc. We also make ECG radio telemetry and heart rate meters and totalizers for exercise studies of athletes and office exercise studies of older men with suspected coronary artery disease.

Another area that certainly needs something done about it is the 432 antenna field. Not everybody is capable of or wants to make his own antennas. I have wanted to be able to refer to a make that I thot was good and in doing so I know I would be subject to criticism if the thing didn't perform. Our antenna contest listings should have pretty well pointed out that a couple of the popular domestic makes are worse than a dipole--at least they were at the contest. Gain, Inc. has offered to send me one of their new long 432 jobs to evaluate since they (Bill) weren't too happy with the way the little one showed up in the contests. Well, I'm glad to do it for them and for any company. I won't just give a conclusion but tell you exactly how I made the measurement and if you think its n.g. you can forget the whole thing. But I hear a VE2 has a quad of the longest J-Beam yagis and says they seem to do what is claimed. Let's hope I get the same results.

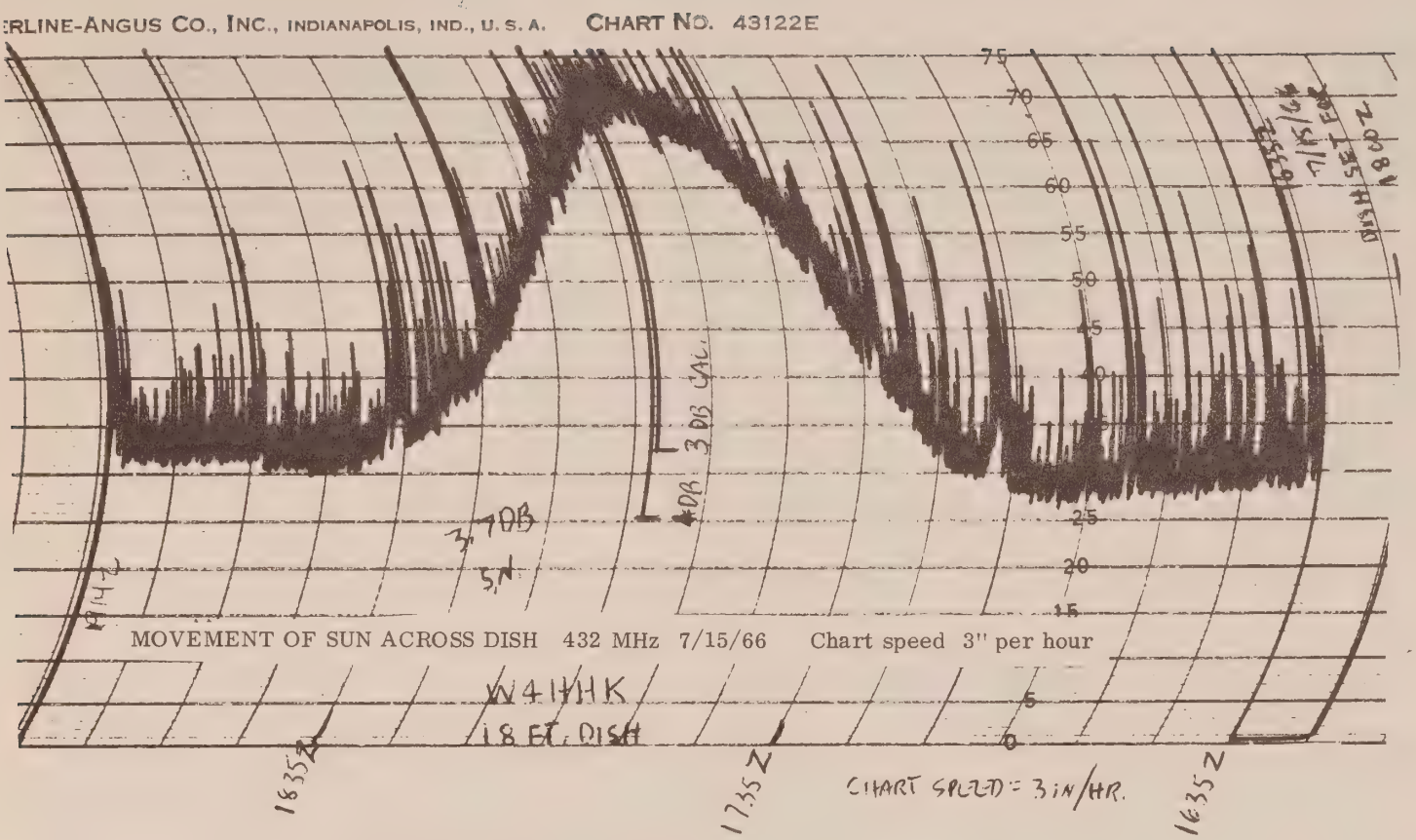


This marker generator puts out harmonics of 1 Mc. from 2 Mc. thru 1296. It uses a 1 Mc. crystal oscillator driving a tunnel diode. The tunnel diode switches at a very fast rate generating strong harmonics every 1 Mc. (the switching rate). Adjust against WWV and be sure of band edge calibration and 1 Mc. intervals. Can also be used as a weak-signal source for adjustment of antennas & converters. Operates from self-contained penlight cells. $25 postpaid.

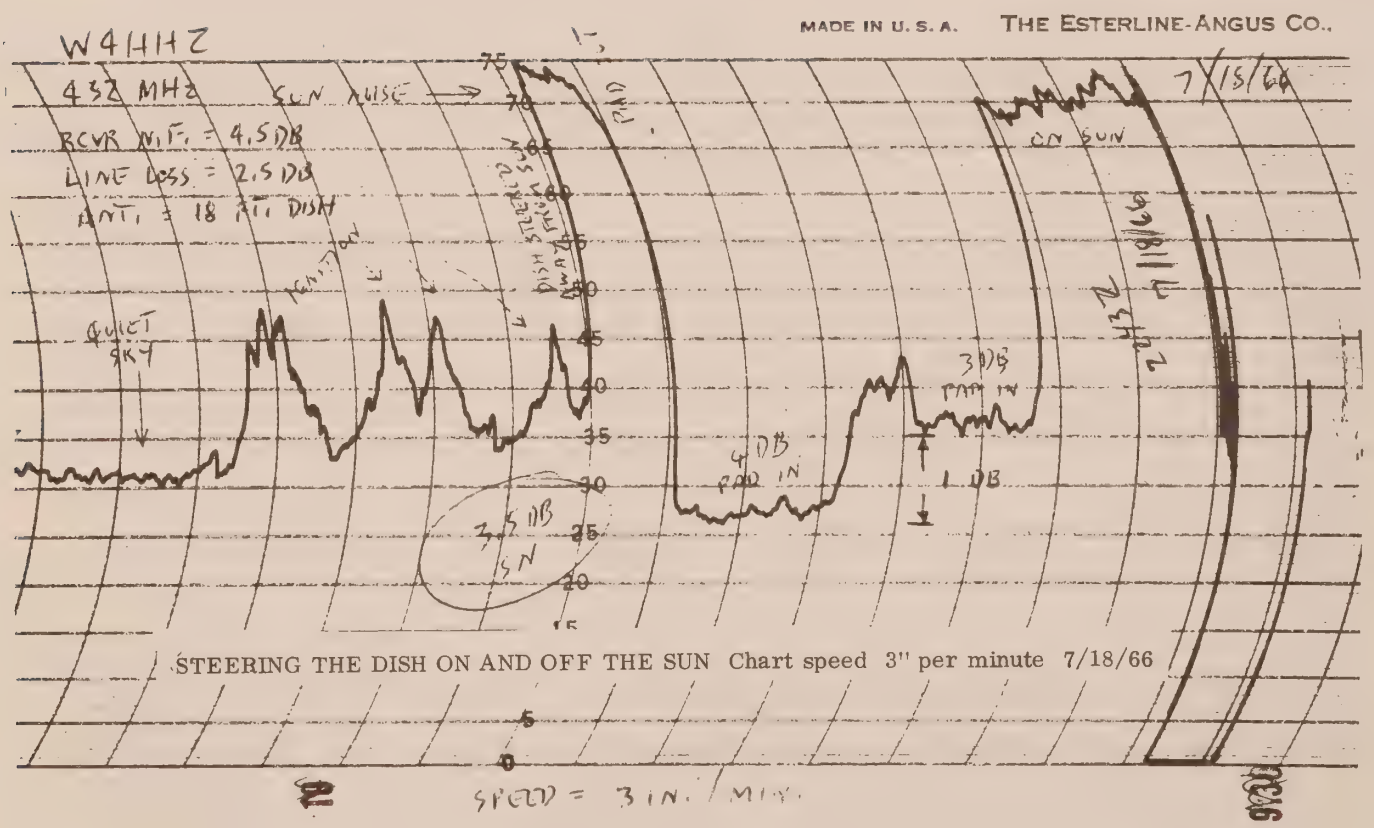
SUN NOISE

Paul Wilson, W4HHK, sent me the following information regarding his work with sun noise. The amount of noise increase you get when you sweep your antenna across the sun is a common test for big antennas. If you don't get any, you have troubles--at 432 anyway. You don't need a big dish like Paul's to get an increase in noise--it can be done with inexpensive Yagis. Paul's work is more quantitative and I think of interest to those of us who aspire to moonbounce and long-haul work. Here's a summary of equipment and method. Freq: 432, Feedline loss (calculated) 2.25 db-2.5 db.) Receiver n.f. about 4.5. db. Recording method: Esterline-Angus chart recorder fed by rectifier connected to 500-ohm audio output of 75A3 receiver. BFO and AVC off. Commercial step type attenuator in 50-ohm line between converter and 75A3 receiver. Fixed 20 db pad on output of converter and 10 db pad on 75A3 input. Difference in db between sun noise and quiet sky noise measured by inserting appropriate attenuation to reduce sun noise to same level as quiet sky noise. Reading to nearest tenth of a db is given. Receiver selectivity is 3 KHz. An effort is made to maintain the system performance at the same level from day to day. Dish size, 18 ft.

Paul says that since mid May, sun noise values at his QTH have varied between 3.0 and 4.0 db. On three days, Aug. 29, Sept. 16 and Sept 20 levels of about 5 db were observed. This is a high level that is quite out of the ordinary. Also, during the first 15 days of October the level has held fairly steady at around 3.5 db with a gradual increase approaching 4 db the second week.



MOVEMENT OF SUN ACROSS DISH 432 MHz 7/15/66 Chart speed 3" per hour



STEERING THE DISH ON AND OFF THE SUN Chart speed 3" per minute 7/18/66

ODDS & ENDS

VHFER gets out on time this month. I leave for a trade show in London on Nov. 2 & will be gone almost a month so if you want more info on converters than what is on the shelf you'd better hold it a bit. If you see a repeat of material in here 2 years ago please forgive. We just aren't getting construction articles. I have been diddling with field effects at 2 meters but nothing conslusive yet. While they look good from the cross-modulation standpoint and n.f. is OK the gain is reported to be low. This is what I have noticed so far. Had a chat with W1OOP about it and he said RCA reported that you were better off to tap farther down on the input coil and use conventional transistors with a degenerative emitter circuit. Maybe not better off, but as well off. The TIXM12 is a cheapie for r.f. at VHF if you want to play. The TIXM10 seems the best of the cheap germaniums. See my mention of them in the mixer article. Henry also mentioned his tests with steep-skirted 6 kc filters and weak phone sigs. Said the sharp skirts didn't give as good copy as ones with a more conventional response.

SATELLITES

The first five paragraphs are from the OSCAR Newsletter received Oct. 24. The last paragraph is a personal communication to me. K7AAD

OSCAR 5. It is just about certain that OSCAR 5 will not be launched this year. Progress is being made on the DJ4ZC package, but additional work remains to be done before it is shipped to OSCAR Headquarters. Once it arrives, some finishing touches will be necessary before a launch can be requested. As soon as any definite launching information is available, it will be published in the quarterly Newsletter, or in a special notice if necessary.

Meanwhile, it is fair to assume that the DJ4ZC package will be the next unit to fly. This unit will be similar to OSCAR 3 and is expected to fly in an orbit similar to OSCAR 3. The input frequency will be 144.1 MHz (±20 kHz) and the output frequency 145.9 MHz (±20 kHz). The altitude should be about 500 nautical miles. The unit will be battery operated and should last three or four weeks. It is expected that the sensitivity of the DJ4ZC package will be higher than that of OSCAR 3, so very high transmitting powers should not be required.

With the amount of advance warning for OSCAR 5, there will be little excuse for anyone not being prepared when the launch occurs. Once the satellite has lifted off the launch pad, the limited life will allow very little time for improvements on your equipment or operating technique. If there were any lessons learned from the OSCAR 3 and 4 operations, it was that the stations with the best equipment and operating techniques were the most successful.

The operating techniques for OSCAR 5 will be similar to those for a DX contest on the lower bands and many of the same skills will apply. If your CW skills have grown rusty over the years, some routine operation on 20 or 40 meter CW might be in order, or better yet, get into one of the contests which are periodically run on those bands.

The amount of participation in OSCAR 5 by any individual or group will depend upon advance preparations and the time available for operating during the active life of the satellite. Remember, this unit will have a relatively low altitude. Passes will be in range of your station 5 or 6 times a day for durations of a few minutes up to a maximum of about 15 minutes each.

Word from WA6ZIJ is that the satellite his group is working on will be ready for launching after Oct. 30 next year. One of its several functions is to act as a repeater, taking in at 432 and coming out at 1296. Power output there will be 1.5 watts into a 3 element colinear. It will be powered mainly by solar panels and has a life expectancy of 5 years, the performance gradually deteriorating. It will be in a sub-synchronous orbit with a 28 day period. As I understand it, it will not be usable for 13 days out of 28. The satellite will be programmable from the ground for some of its functions. Unlike the last satellite up, which was a translator, this one will be a repeater which means it accommodates one QSO at a time.

2 METER MOONBOUNCE REPORT

The following two letters from K6MYC, Mike Staal, 13310 Carrick St., Saratoga, Ca. First one dated Sept. 12. " In response to a request by Ray, VK3ATN, I am forwarding the following results of our two-meter moonbounce attempts on Sept. 7 and Sept. 11. On Sept. 7, Bill, K6CLM, and myself both heard portions of letters for approx. 10 sec. during Ray's first xmit period, 1528-1530, and this was the first time that we had ever heard Ray's signals. However, for the next 20 minutes of the sked despite careful listening, no more signals could be heard. Ray's copy was completely negative from us and he heard his own echos very weakly until 1534 GMT. This was in sharp contrast to the past 3 months when he copied both his own and our signals almost consistently for the 20 minute skeds. Conclusion: Faraday rotation finally got us or the solar flare which occurred around Sept. 7 had an adverse effect on signals. On Sept. 11 we blew our linear during tuneup and lost considerable listening time attempting repair. Listened at the middle of the sked (best time) and heard letters during last ten sec. of Ray's transmission. Ray again heard nothing---not even his own echo. Ray says there may have been signals on 144.094 which to my knowledge is W6DNG's frequency for skeds. "

Oct. 18 letter. "The Oct 4 try was completely wiped out when a few days before we had 50 mph winds and the whole array came down leaving quite a mess of twisted and bent elements and broken phasing lines. Tuesday morning, Oct. 4, with much appreciated help we lifted the array back up on the supports and I spent the rest of the day putting things back in order. Oct 8 (Sat) K6HCP and W6UGL and I were out early to get things ready. Abt 15 minutes before sked time we tried for our own echos and for the FIRST time they were there and real good at that. So by sked time we were all quite confident that we would make it this time for sure. The sked time came and went with us tuning 400 cycles each side of our freq and hearing nothing. After the try we were all confused thinking things like Ray's xmtr must have failed, etc. On our 15 meter sked with Ray later that day we found out Ray heard nothing either (except his own echos) until about 4 minutes before the end of the sked. The signals heard were 2 Kc low and did not sound like our mechanical fist (which we weren't using) so the signals were passed over. Somehow on Ray's end or ours we had a 2 Kc frequency split and this we feel cost us success. But we're ready and confident for next month. Sked times are as follows: Nov. 1 1212-1234 GMT Decl. 24 deg 59 min. Nov. 5 1600-1622 GMT, Decl. 22 degrees 56 minutes."

VK3ATN writes"(July 21) Earlier this week I copied Q5 at times the 2 meter moonbounce of K6MYC/K6CLM (perfect copy for QSO purposes.) They unfortunately did not hear me because of high noise level. I have spoken with Sam Harris, W1FZJ/KP4 since and he was amazed at the strength of the echos which I re-played on 7 Mc. Eventually I'll get around to 432 and have also thought about 50 Mc. moonbounce. Possibly you may have some interested readers ." His address, T.R. Naughton, Box 80, Birchip, Victoria, Australia.

KW FINAL MAINTENANCE

Art Bates, W5ML, Vivian, La., sent this info on KW Finals with air sockets. Art says this kind of final with a blower underneath sends all kinds of dirt up to the air sockets, grease especially. These particles cling to the forked tabs and cause a loose contact or perhaps a semi-contact to the tube pin. When on the heater pins, you can guess how the heater voltage remains constant. Using cleaning fluid, he dips a pipe cleaner into the bottle and runs it thru and between the forked prongs. Then before the tubes are replaced, inspects the tension and closing up of the prongs. Also, you carefully use a new steel brush and go over the tube pins. Then wipe them clean. Art says he had trouble before and this is what he found. This should be done at least every 2 years.

OPEN BANDS

by Marilyn Wiseman, K8ALO

Reports up to a new high, mainly M/S, Aurora. Two fine Aurora openings during August & September. Many say September Aurora the best in years. Have plenty to report so will keep it short. See you next issue. Send reports to: Box 103, Petersburg, Ohio 44454.

50 MHz Scatter:

Aug. W4GIM/3 (Md.) hrd WA5GQT.
WA6GKK (Calif.) wrkd K7ICW, W7CNK, K7BBO, WØEYE, K7CIN and many Calif. stations. Gary says conditions good between 400-450 mi. He wrkd K6RIL twice each weekend, night skeds with W7CNK continue good.
K7BBO (Wash.) wrkd WA6AWY, WA6SXM, WA6RWH during Perseids. Also wrkd K7ICW, W7UFB, plus 9 Calif. stations.

Sept. K7BBO (Wash.) wrkd W7UFB, 10 Calif. stations.
K71CW (Nev.) wrkd W7DAY, WØJXK/7, WØEYE, W7UFB, 4 Calif. stations.

144 MHz

Aug. 7-11 K7ICW (Nev.) wrkd W6DQJ, W6NLZ, W6DNG, K6IBY

Aug. 23 W5ML (La.) wrkd WA5KHE/5 (Tex.), W4ZCM (Ky.) W8GOH (Ohio), W5RCI (Miss.), W4EJQ (Va.), hrd many 4, 5's. WA4BVW (N.C.) wrkd E. Pa., W.Va., E. Ind., all over Ohio.

Aug. 26 WA4BVW (N.C.) wrkd Dayton,Ohio, also into Chicago area. Opening lasted about 1 hr.

Oct. 10 W7JCU/4 (Ala.) wrkd W4VHH (S.C.), W4WDH (Ga.), W5CKY (Miss.), W4UUF (Fla.), K5WXZ (Tex.). Dale wrkd 6 states, he says opening ran east and west. All sig S-9. hrd K5WXZ (Okla.).

144 MHz Meteor Scatter

July 30 W4CKB (Fla.) wrkd W5UGO (Okla.) 1st sked state #17.

Aug. 7 K7ICW hrd WØEKZ (Kans.) pings, calls.

Aug. 11 W4CKB (Fla.) wrkd W1MEH (Conn.) State #18, W8QOH (Ohio) State #19. K7ICW (Nev.) wrkd W7LHL (Wash.) first Nev.-Wash. QSO. hrd WØEKZ.

Aug. 12 K1ABR (R.I.) wrkd W4NUS (N.C.) 700 mi. Had sked with W5UGO (Okla.), but hrd only a few pings. W4CKB (Fla.) wrkd K9UIF (Ind.) State #20, K1BKK (Vt.) State #21. K7ICW (Nev.) wrkd WØEKZ (Kans.) first Nev.-Kans. QSO. hrd WØEYE (Colo.). K2HLA (N.Y.) wrkd WØNXF (Neb.) 1230 mi. for new State. W2AZL (N.J.) wrkd WØNXF (Neb.), W9MAL (Ill.), W4CKB (Fla.). Hrd WØEOZ (N.D.), WØMOX, WØEYE (Colo.). Had near miss with WØQDH, WØEKZ. W5UGO/5 (Okla.) wrkd WØEOZ, W8BKI, K6HMS, W3BYF, WØEYE. Hrd K7NII, K5TQP, W4CKB, K9UIF, K9AAJ, WØNXF. W1AZK wrkd WØNXF, WØLER, WAØFDY. W1JSM wrkd WØLER, W9IFA. W5WXZ

wrkd K6JYO, K6HAA. WØEYE wrkd K6JYO, WØEOZ. W6GDO wrkd WØNXF, K5TQP, W7WVE. W6WSQ wrkd WØENC. WAØFDY wrkd K4IXC, W1AZK.

Aug. 13 W4CKB (Fla.) wrkd W9BRN (Ind.), W2AZL (N.J.) State #22. Bev says sked wrkd nightly with W4LSQ (Ala.), W4VHH (N.C.). K2HLA (N.Y.) wrkd W4NUS (N.C.) 500 mi. This was a new State for W4NUS.

Aug. 21 K7ICW (Nev.) hrd WB6KAP (Calif.) 500 mi.

Aug. 24 K7ICW (Nev.) hrd WØNXF (Neb.)

Aug. 28 K7ICW (Nev.) hrd W7WNE (Wash.) 950 mi.

Sept. 6-8 K7ICW (Nev.) hrd K5WXZ (Tex.) 1064 mi.

144 MHz Aurora

Aug. 29 K2HLA (N.Y.) wrkd VE3DAW (Ont.)

Aug. 30 Aurora noted this night but no reports. Hrd 1, 2, 3, 4, 8, 9, Øs.

Sept. 3 W2AZL (N.J.) wrkd W5RCI, W4HJQ, WA9DOT, W9BRN, K4EJQ, W4CPX, W4NUS, W4VHH, W9PBP, WA8NBD, W9UNN, plus many others W1, 2, 3, 4, 8, VE2, VE3's. Hrd W5UGO. Carl says he wrkd 10 states, hrd 21. W5ML (La.) wrkd W9IFA (Ill.). W5AKI hrd W9IFA plus one 8 call. K2HLA (N.Y.) wrkd W9BRN (Ind.), WA4ISR (Va.), WA9DOT (Wisc.) was a new state for Dick. Dick says this was best Aurora in years.

SKEDS WANTED

Send all SKEDS WANTED info to Marilyn Wiseman, Box 103, Petersburg, Ohio 44454

K7BBO Dave Robinson, 1716 S. 8th St., Tacoma, Wash. 98405. Looking for 2-meter meteor-shower skeds. Dave's freq. 144.023-144:044 MHz. Also 6-meter scatter skeds, any day or any time c.w. freq. 50.004 MHz. SSB freq. 50.105 MHz or can go on any freq.

W7UFB Casper, Wyo. on most every Sun. 50.005-50.105 MHz from 0730-0900 PDST.

W9DID Bob Sabon, 817 W. 34th St., Chicago, Ill. 60608 wants skeds for Nov. Bob runs 500 W SSB freq. 145.002 MHz.

K1ABR Dick, 12 High View Dr., Cranston, R.I. 02920 looking for skeds during any M/S. Dick will be on for sure during Nov. Leonids showers on 144 MHz.

W4CKB Bev Cavender, Box 88, Lake Placid, Fla. looking for skeds on 144 MHz. Bev runs KW, long yagi freq. 144.081 MHz. Policy at W4CKB: "The first station in each new state wrkd via meteor scatter receives a box of tree-ripened citrus fruit prepaid from W4CKB orange groves."

K2HLA Dick Wilborg, RFD #1, Cutchogue, L.I., N.Y. 11935 looking for sked with Ala., Miss., Ga., Tenn., Wisc., Minn., or any others. Freq. 144.038 MHz.

W4AWS Art Hale, 1414 Oakley St., Orlando, Fla. 32806 interested in skeds for all major M/S on 144 MHz.

W5ML Art Bates, Vivian, La., trying to break down the barrier to W8PT, Jack, Watervliet, Mich. They would appreciate any one in their line of fire to answer them if heard.

Ed. Note: I am very glad to see the increase in long-haul & meteor sked activity. Listings are restricted to those with high power (250 w. or more) and large antennas. Since we cannot know the equipment of all hams we must depend on our readers to let us know if the rules are not being followed. It isn't that we are against DX with low power, it's just that a line has to be drawn somewhere or everyone with a gooney bird and a Hy-Gain antenna will want a sked listing & there isn't that much space available. K7AAD

TVI FROM PARKS CONVERTERS

After all, nobody's perfect. I have heard ugly rumors that Parks 432 converters interfere with the family TV set on certain channels. Should there be a grain of truth in this whispering campaign let me suggest a remedy which I have heard from equally unreliable sources. Wrap the whole converter in aluminum baking foil or sheet copper you get at the hobby shop and ground it to the main converter ground. The panel is both coated and anodized on both sides so you have to make sure you tie the foil to something that is really a ground. If you think you might have TV signals getting in thru the plastic box try the same technique. We used to spray coat the insides but we got into cavity effects with the 432-2 and never could prove it did any good on the 432-3. Besides, spraying conductive coating is a real pain & expensive.

We have had a couple of kicks on crystal tolerance on our 432 converters. Maybe it's worth discussing a bit. Some people want them "right on the money" and in such cases we politely decline their business. There are easier ways of making money. Prime consideration should be frequency stability, it would seem to me. The earlier converters were not as stable as they could be and it was attributed to the fact that the crystal was exposed to temperature variations. Some hams turned the xtal socket upside down so the crystal would be in the box. The 432-3 has the crystal in the box and operates in the series resonant mode. This means you ain't gonna move it much no matter what you do. This is nice for s.s.b.but no good at all for lining it up to your receiver. Many of the better receivers have provisions for moving the pointer slightly. And you <u>must</u> have a marker of some sort to know exactly where 432 is. There have been some awful crystal problems in the last 8 months or so. Deliveries were so bad with our major supplier of xtals for the 432 converter that deliveries stretched out from a month to 6 weeks. With deliveries like that you don't work closely with the manufacturer to get the crystals right on. We were way behind and got xtals from other vendors where we could. Now we buy almost exclusively from Hunt Crystals which makes a very high quality unit but it takes about a month to get them. I believe they hold to .005%. But at the injection frequency for 432 that means it can be 20 kc. off and still within tolerance. I have heard of other crystals being 60 kc. off. If we need a special xtal in a hurry we get it from another vendor and since the vendor may not have proper information to work with the tolerance may be worse. I really pity the crystal manufacturer when it comes to dealing with people who want precise tolerance yet do not provide him with proper information about the circuit the crystal is used in. We send a crystal near the proper frequency and tell him how many kc. off it is in a certain direction whenever this is possible.

Published by Parks Electronics Lab.
419 S.W. First
Beaverton, Ore. 97005

Return Requested